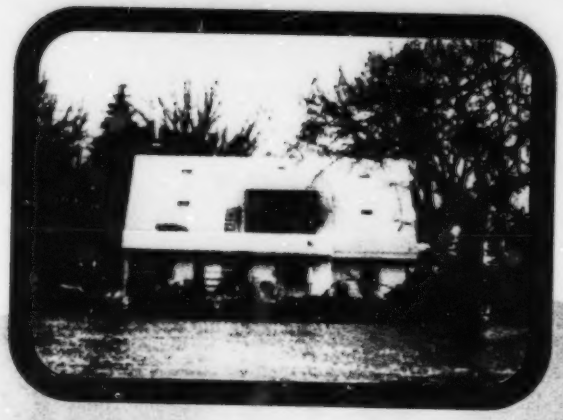
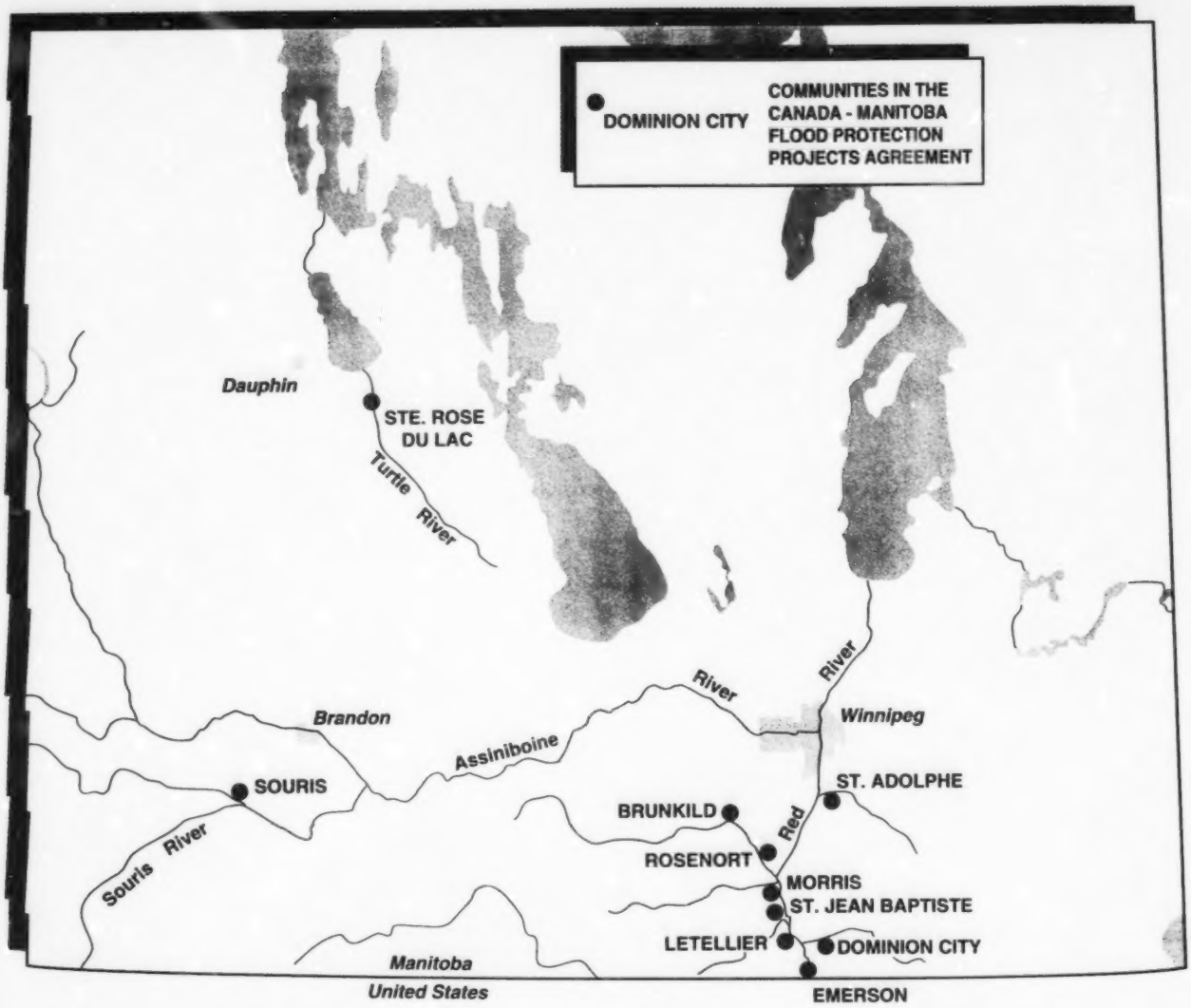


MANITOBA FLOOD PROTECTION PROJECTS AGREEMENT

1990 – 1991 ANNUAL REPORT
PROJECTS AGREEMENT WIND-UP REPORT

Government of Canada
Governement du Canada
Government of Manitoba
Governement du Manitoba

92-07857/



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CANADA-MANITOBA
AGREEMENT RESPECTING THE CONSTRUCTION OF
FLOOD PROTECTION PROJECTS IN MANITOBA

October 30, 1991

The Honourable Jean J. Charest
Minister
Department of the Environment
Ottawa, Ontario
K1A OH3

The Honourable Harry J. Enns
Minister
Department of Natural Resources
Winnipeg, Manitoba
R3C 0V8

Dear Ministers:

We are pleased to present the ninth Annual Report of the Implementation Committee for the administration of the *Canada-Manitoba Agreement Respecting the Construction of Flood Protection Projects in Manitoba*. This report covers the work undertaken during the period April 1, 1990 to March 31, 1991. As the agreement expired on March 31, 1991, this also serves as the wind-up report for the agreement.

During the fiscal year of 1990/91, the flood protection works were completed at Ste. Rose du Lac and at St. Adolphe. Emergency communication towers were constructed at Emerson and Dominion City, and some dyke clean-up work was completed at the former and some internal drainage works were undertaken at the latter. During the period of the Agreement, from 1982 to 1991, the dyking systems of eight of the ten communities in the Agreement were upgraded to the 100-year flood level; the uncompleted works at two communities were not undertaken due to delays in seeking local government approvals and resulting increases in costs. Although these latter two communities are protected to some degree by their existing dyking systems, upgrading of these systems should be considered as part of any future agreement, as well as the protection of other important communities in the province which were not included in this Agreement.

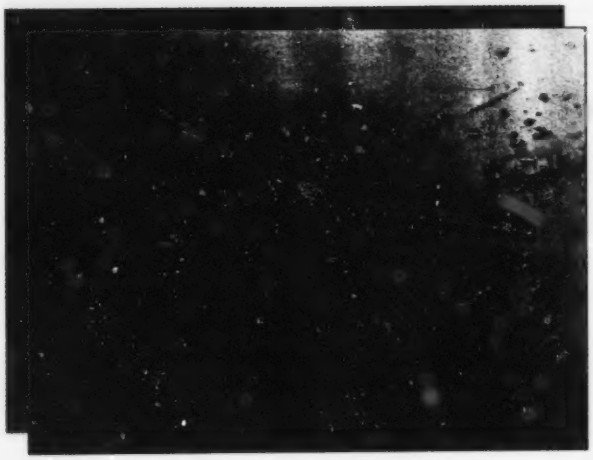
Total expenditures under the agreement have totalled $6,851,114.98. During the period April 1, 1990 to March 31, 1991 $242,802.71 were eligible for cost sharing under the agreement. Of this amount 45 percent or $109,261.22 was Canada's share and 55 percent or $133,541.49 was Manitoba's share.

Yours truly,

L. J. Whitney, P. Eng.
Chairperson
Implementation Committee

Dr. R.D. Bjonback
Environment Canada
Implementation Committee

WHY FLOOD PROTECTION WORKS ?



Morris at the height of the 1950 flood

Morris during the 1979 flood

Floods are natural phenomena that occur periodically along most rivers in Manitoba. However, early settlers in Manitoba were drawn to rivers because of their usefulness for water supply and for transportation. Many of the communities were established along rivers, and some of these communities were located partially or wholly in river flood plains. These communities experienced flooding and the early settlers learned to live with this constant threat of flooding.

However, damages from modern day floods far exceed those experienced by our early settlers. The growing concentration of people in urban areas and rising standards of living have, over time, increased the potential level of losses and flood damages dramatically. These damages and losses are both economic and human, affecting the individuals in the flooded communities and affecting the sustainability and viability of the communities.

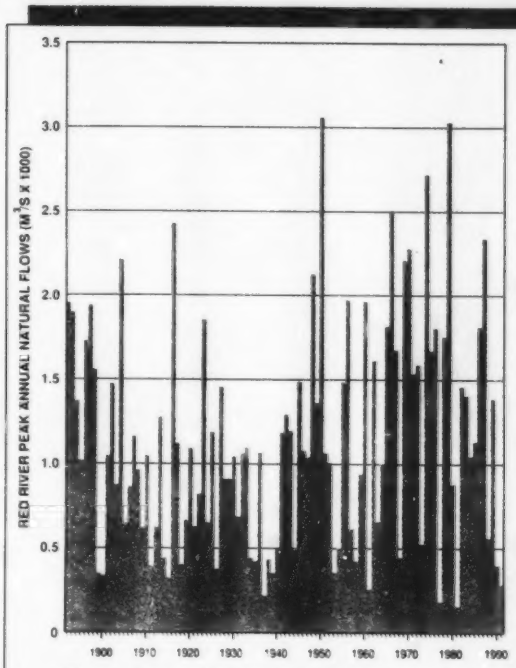
The best way to avoid flood damage is to stay out of the flood plain. However, we cannot change history and move all floodprone communities away from the flood plain, especially in places like the Red River valley where the flood plain is many kilometres wide.

Reacting to each flood as it occurs with emergency measures, such as construction of temporary dykes and evacuation of residents and valuables, is somewhat effective in protecting life and property from floods. However, such measures are costly, only partially effective, and must be incurred every time there is a flood. Compensation for flood damages is also expensive. Both emergency measures and compensation add to the burden of taxpayers of Canada and Manitoba, and do little for the economic sustainability of the flooded communities.

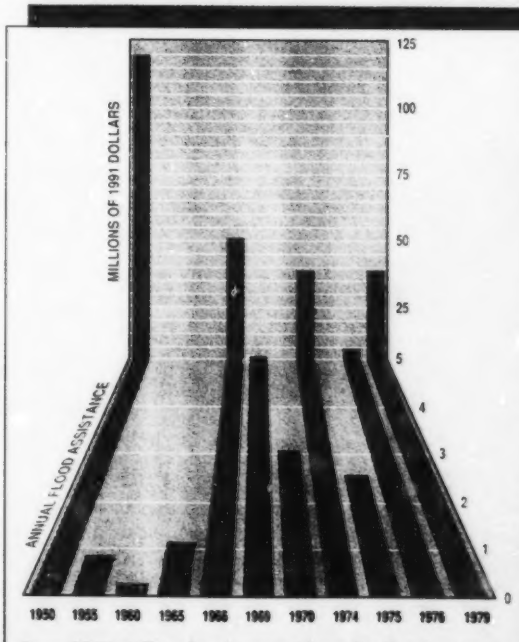
Flood protection works, such as dykes, are often the only practical solution for sustaining the viability of floodprone communities and for reducing the trauma and psychological impacts on the people of the communities. Such works were constructed for a number of communities in Manitoba in past decades. The disastrous 1950 flood along the Red River was the impetus for the construction of a number of flood protection works in the Red River valley, including the Red River Floodway and the ring dykes around several valley communities. These works were undertaken in the 1960s by the two senior levels of government after a Royal Commission had examined potential solutions to the flooding problems and found that flood control works were economically feasible. In Ste. Rose du Lac, it was the severe flood of 1975 that was the impetus for the community to construct dykes to provide protection from flooding.

However, the protection afforded by the works constructed for the Red River valley communities and for Ste. Rose du Lac was shown to be inadequate in the decade following the construction of these works. The 1979 flood amply demonstrated the vulnerability of the flood protection systems in the Red River valley communities. In Ste. Rose du Lac, the 1986 flood overtopped the dykes, once again leaving the town inundated.

In Souris, only a portion of the community is floodprone; the water treatment plant is part of that floodprone portion. During the 1976 flood the plant was nearly inundated; had it been inundated, the whole community of over 1,500 people would have been without clean drinking water for weeks.



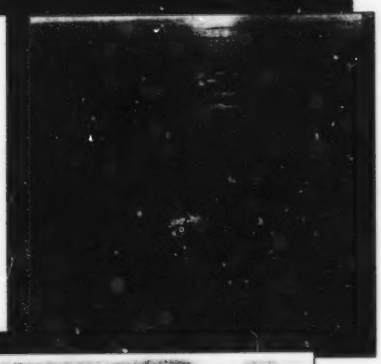
Flows on most Manitoba Rivers are extremely variable. For example, peak natural annual flows on the Red River can vary by over 3,000 cubic metres per second from year to year.



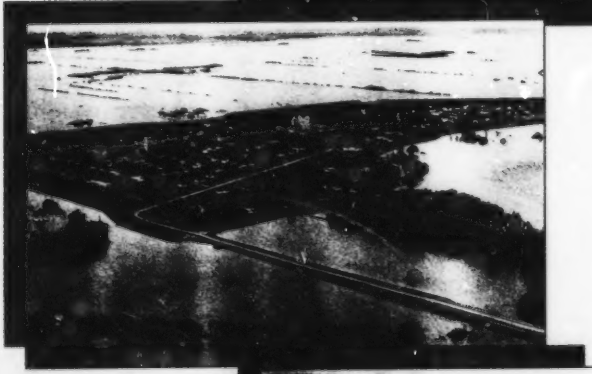
Over $200 million has been paid out for flood assistance and restoration works in Manitoba since 1950

MANITOBA FLOOD PROTECTION PROJECTS AGREEMENT

Emerson (1979)



Dominion City (1979)



St. Adolphe (1979)

Letellier (1979)

In 1976 the Government of Canada, under the Canada Water Act, and the Government of Manitoba signed "A General Agreement Respecting Flood Damage Reduction". The objective of this agreement, which is to reduce future flood damages, would be achieved by, firstly, discouraging further development in flood hazard areas. Maps showing the areas subject to flooding in floodprone communities would be produced to inform prospective developers and home owners. As well, both senior governments would avoid investing, directly or indirectly, in flood hazard areas. To date, maps showing floodprone areas have been produced for 16 communities, and both senior governments have implemented policies to avoid investing in flood hazard areas if such investment would increase future flood damages.

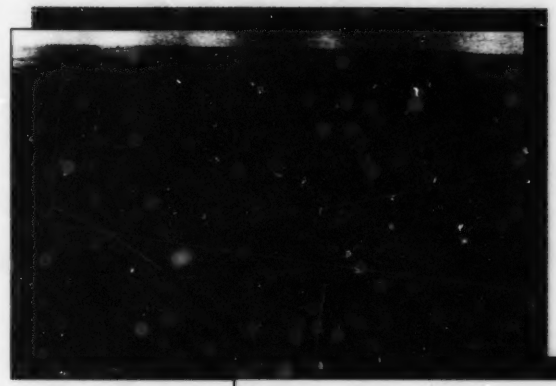
The agreement's objective would be achieved by, secondly, constructing structural works, such as dykes and diversions, for communities where the benefits of the works equal or exceed the cost of the works. Economic studies evaluating the cost and benefits of upgrading the existing ring dykes in the Red River valley were conducted in 1981, and it was found that the benefits of such upgrading would be greater than the costs. Subsequently, on March 10, 1983 the Government of Canada and the Government of Manitoba signed "An Agreement Respecting the Upgrading of Ring Dykes in Certain Communities in the Red River Valley". The eight communities included in the agreement were Emerson, Letellier, Dominion City, St. Jean Baptiste, Morris, Rosenort, Brunkild, and St. Adolphe. The dyking systems would be upgraded to provide protection to the 100 year flood level. Also, various facilities in the communities would be constructed to make flood fighting more effective during future floods. The Agreement provided for the expenditure of $5.4 million.

The Agreement was amended on May 22, 1985 to include the communities of Ste. Rose du Lac and Souris; an additional $1.6 million was provided for expenditures. Ste. Rose du Lac is situated along the Turtle River, near Lake Dauphin, and Souris is located along the Souris River in southwestern Manitoba. The Agreement title was changed to "An Agreement Respecting the Construction of Flood Protection Projects in Manitoba" to reflect the inclusion of these two communities. The existing flood protection works would be upgraded and

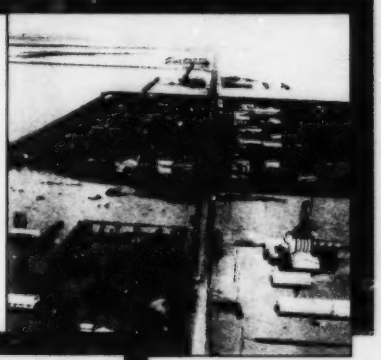
expanded for Ste. Rose du Lac and dykes to protect Souris's water treatment plant would be constructed. In both communities the works would protect against a 100 year flood. An economic study evaluating the upgrading and expansion of the dykes protecting Ste. Rose du Lac was conducted in 1982, and it was found that the benefits of such upgrading would be greater than the costs. For Souris, the upgrading would achieve the objective of protecting a very vital, essential part of the community's infrastructure that is crucial in maintaining the health of the community's residents.

The Agreement was further amended in September 28, 1989 to extend the term of the Agreement by two years, and to increase the amount of available funds by $800,000. This second amendment was necessary because of delays regarding acquisition of land at Ste. Rose du Lac, negotiations with the U.S. Army Corps of Engineers for the construction of the dyke along the international boundary at Emerson, and negotiations with the Rural Municipality of Ritchot for the location and cost-sharing of the north dyke at St. Adolphe. As well, a section of the upgraded earthen dyke at Emerson needed to be replaced by sheet piling dyke as signs of movement had appeared in the nearby riverbank.

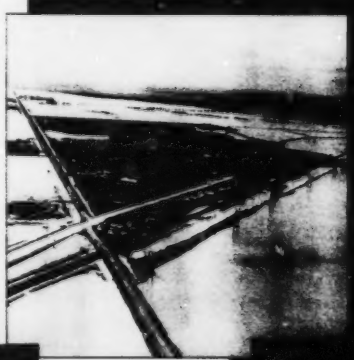
The Agreement and its amendments provided for the expenditure of $6.9 million. All of the necessary engineering design work was undertaken by Manitoba Natural Resources. All construction work was contracted out to private firms, with Manitoba Natural Resources undertaking all contract supervision work. All expenditures were shared 45 percent by Canada and 55 percent by Manitoba. The local governments signed agreements with Manitoba in which they agreed to assume approximately 5 percent of the construction costs. All communities except Souris agreed to assume one-quarter of the annual maintenance costs. Souris, because its dykes are relatively small, agreed to be responsible for all future maintenance.



St. Jean Baptiste (1979)

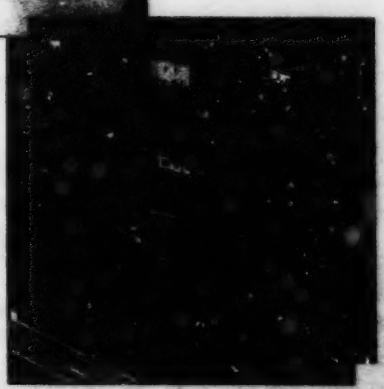


Rosenort (1979)



Brunkild (1979)

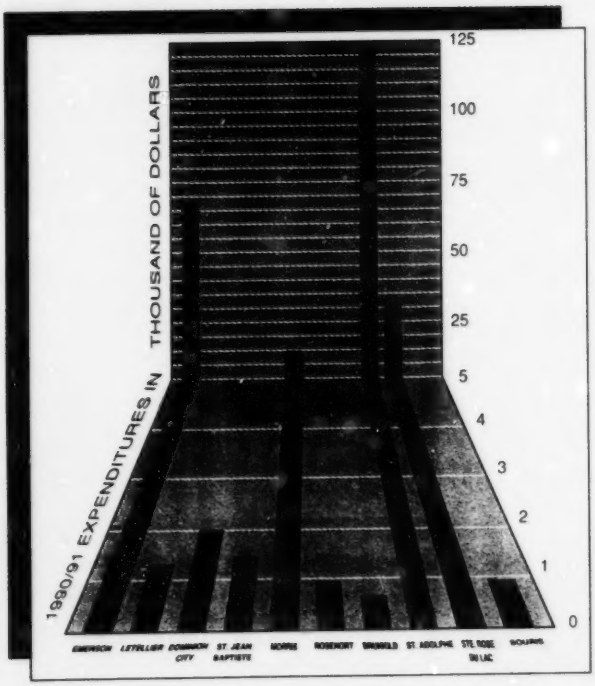
Ste. Rose du Lac (1975)



Souris water treatment plant (1976)

WHAT WAS DONE 1990/91 SUMMARY

All planned works were completed in Ste. Rose du Lac and St. Adolphe. All planned works were completed in Emerson, except for the construction of the north dyke in the portion of the community west of the Red River (called West Lynne). Only a small portion of the planned works were completed in Dominion City. Expenditures eligible for cost-sharing under the agreement for the 1990/91 fiscal year totalled $242,802.71. This included minor audit adjustments for all of the communities.



A total of over $240,000 was spent in fiscal year 1990/91 on flood protection works eligible under the agreement.

Ste. Rose du Lac

Final payments for expropriated right-of-way were made. Cost-shareable expenditures for the year were $30,474.00.

St. Adolphe

The required dyke construction and dyke raising was completed. As well, backup pumps were purchased. The expenditures which were eligible for cost-sharing were $123,032.76. This amount included the cost of works which were undertaken in the previous year but which was carried into 1990/91 because proportioning of the cost between Canada, Manitoba, and the R.M. of Ritchot was not possible until all of the new dyke construction was completed.

Emerson

The construction of the sheet piling dyke to replace the 120 metres (400 feet) of earthen dyke adjacent to the hospital and senior citizens home was completed. This construction was reported as complete in 1989, but some additional construction work was necessary in fiscal year 1990/91. The final bill was received from the U.S. Army Corps of Engineers regarding Manitoba's share of the cost of constructing the International Boundary dyke. Final landscaping and clean-up was completed on the Manitoba side of this dyke. The emergency communications tower was constructed. Expenditures for the year were $67,765.18.

Dominion City

The emergency communications tower and a tractor pad for the portable pumps were constructed. Expenditures were $1,992.04.

Other communities

Work in all of the other communities had been completed in previous years. There were no expenditures for 1990/91, although there were minor audit adjustments.

Construction of sheet piling at Emerson

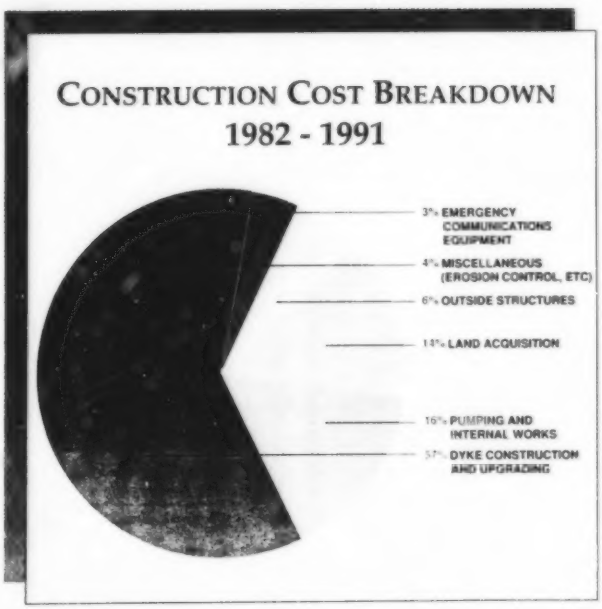
WHAT WAS DONE 1982 - 1991 OVERVIEW

The dyking systems for the communities of St. Adolphe, Letellier, St. Jean Baptiste, Morris, Rosenort, Brunkild, and Ste. Rose du Lac were upgraded as planned, as was the dyking system for the part of Emerson east of the Red River and the dyking system protecting the water treatment plant for the town of Souris. Emergency communication equipment was installed, as planned, in all communities except Letellier and Souris. Other works such as internal drainage, pumping, and storage facilities were completed as planned in all communities except Dominion City.

A total of just over $6.85 million of the $6.9 million allocated for projects under the agreement was spent. Expenditures for flood protection works ranged from $2.75 million in Ste. Rose du Lac to $57 thousand in Dominion City. During the 1988/89 fiscal year, expenditures were over $2.1 million, the highest annual amount spent over the course of the agreement.

By far, the biggest expenditure was for dyke upgrading and construction. Almost $4 million was spent to upgrade or construct dykes for seven of the eight Red River Valley communities, for Ste. Rose du Lac, and for the Souris water treatment plant.

Pumping and internal drainage expenditures followed, amounting to almost $1.1 million. Necessary land acquisition and the construction of outside structures, such as access bridges, accounted for about $1 million and $0.4 million, respectively. The balance of the $6.85 million was spent on emergency communications equipment and other miscellaneous works such as storage facilities and erosion control.



Almost 60% of the total expenditures from 1982 - 1991 have gone for the upgrading and construction of ring dykes

The works that had been planned but were not completed were the upgrading of the dyking systems for Dominion City and for the portion of Emerson west of the Red River (called West Lynne). These communities would require emergency dyking in the event of a 100 year flood. The works were not completed because of delays in seeking local government approvals and the subsequent increases in costs.

Expenditures by year for each of the communities are summarized on the following table.

EXPENDITURES FOR 1982 - 1991

Community	1982/83[1]	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	Total
Emerson		3,834.76	7,356.01	114,675.92	177,281.91	129,477.36	259,703.61	199,436.80	67,765.18[4]	959,531.60
Letellier		7,367.42	65,599.26	335,539.53	94,670.23	6,322.20			1,297.67[3]	510,796.31
Dominion City				19,029.59	33,453.92	2,773.19			1,992.04[4]	57,248.74
St. Jean Baptiste	198,128.74	369.20	48,473.89	287,960.25	121,587.67	15,690.80			1,428.45[3]	673,649.00
Morris	131,004.39	1,045.11	150,186.27	48,808.05	95,119.13	28,186.65			14,367.27[3]	468,716.87
Rosenort	10,209.81	4,369.11	23,293.09	178,840.29	48,289.32	6,675.69			909.86[3]	272,587.17
Brunkild		177,837.07	259,984.61	59,928.85	34,978.79	5,471.38			618.32[3]	538,819.02
St. Adolphe		136,140.54	132,563.68	27,271.96	21,328.18	7,179.84	141,597.20	[illegible]	123,032.76[4]	486,795.56
Ste. Rose du Lac				2,645.00	13,118.04	497,215.16	1,618,392.40	587,201.85	30,474.00[4]	2,749,046.45
Souris						17,964.15	109,023.86	6,029.09	917.16[3]	133,934.26
Total	339,342.94	330,963.21	687,456.81	1,074,699.44	639,827.24	716,956.42	2,128,717.07	690,349.14	242,802.71	6,851,114.98

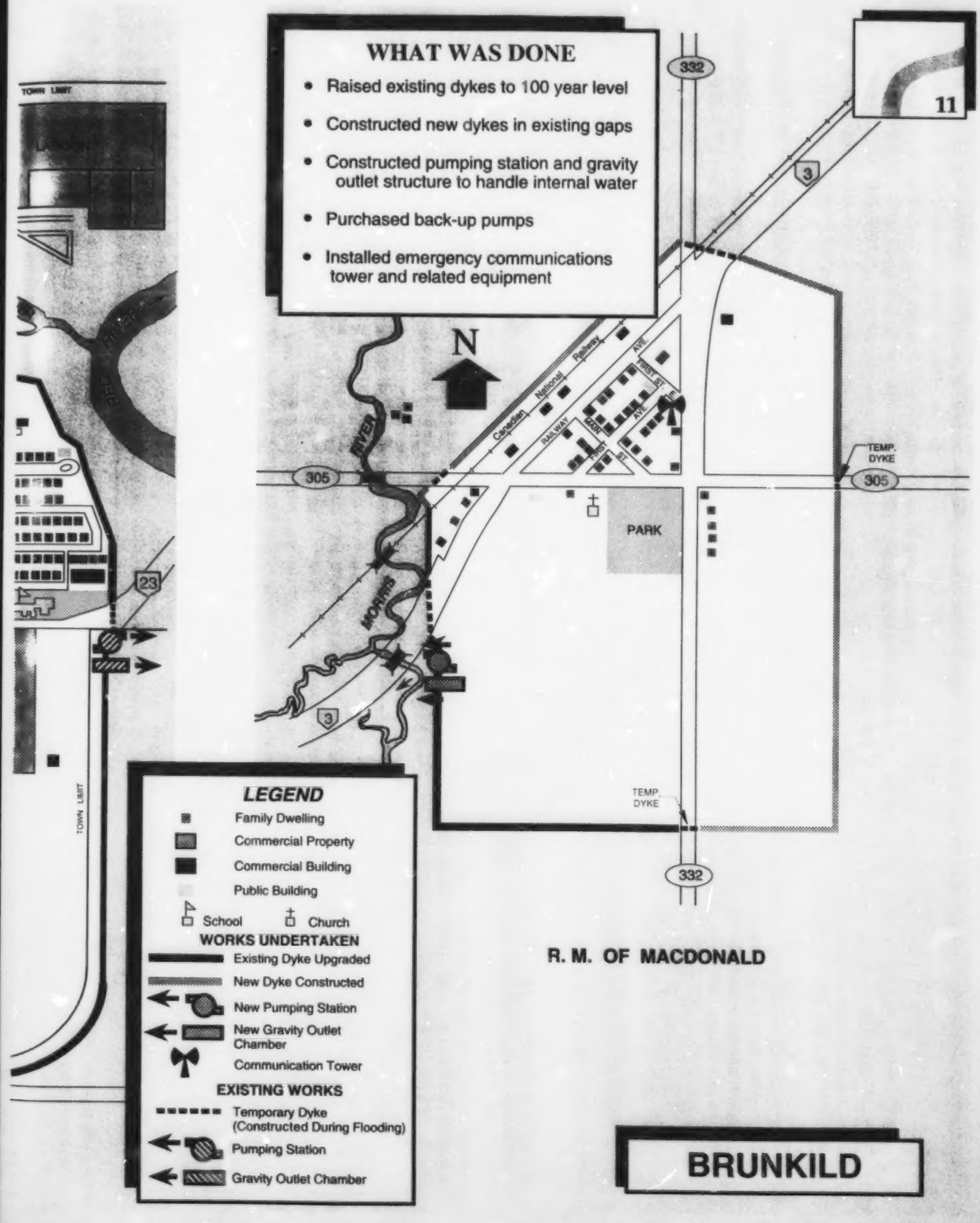
1 The expenditures indicated are for those retroactive costs incurred by the Province prior to the agreement as allowed under clause 4(5) of the agreement.

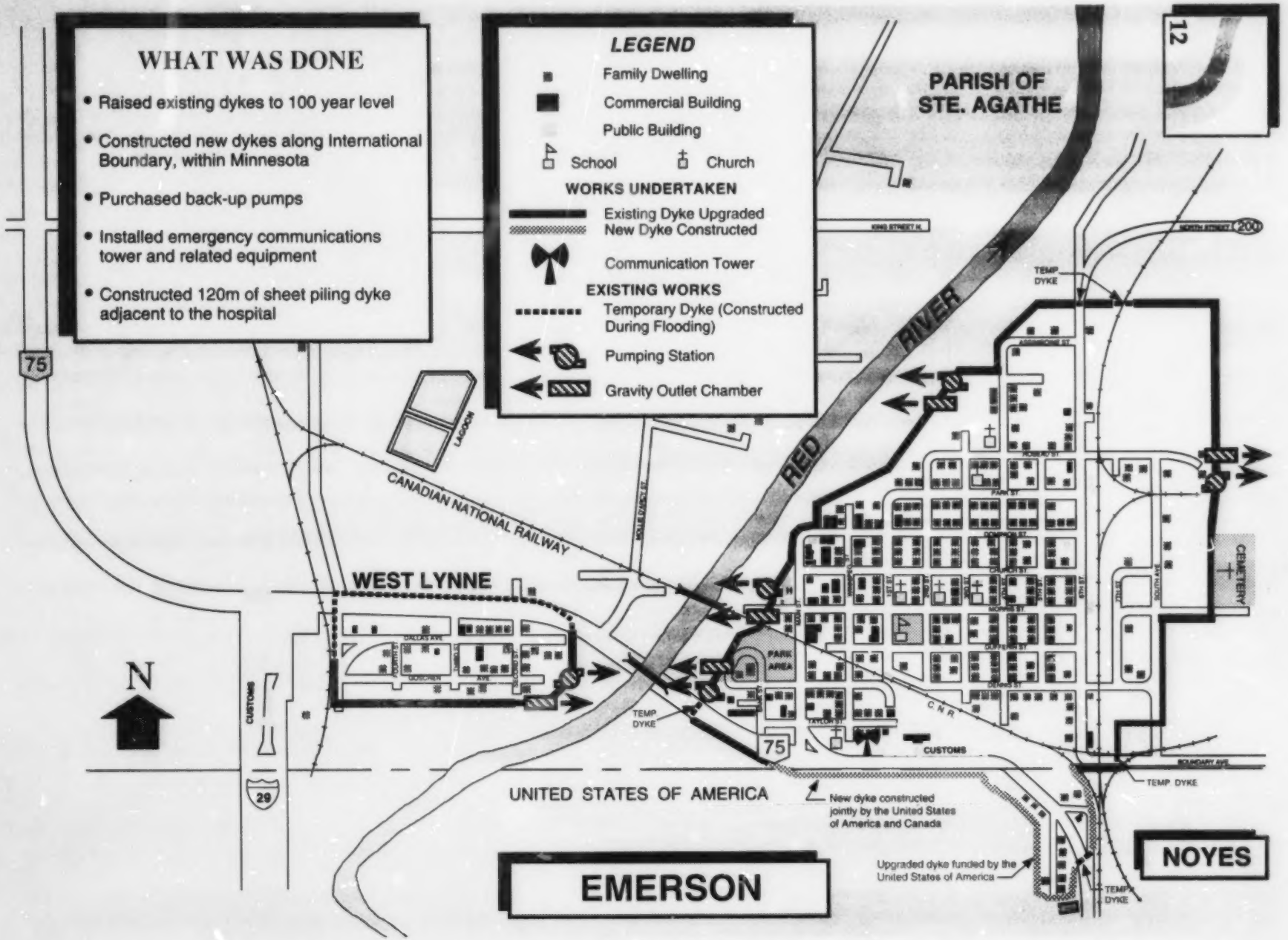
2 Audit adjustment credit for costs not shareable under the agreement.

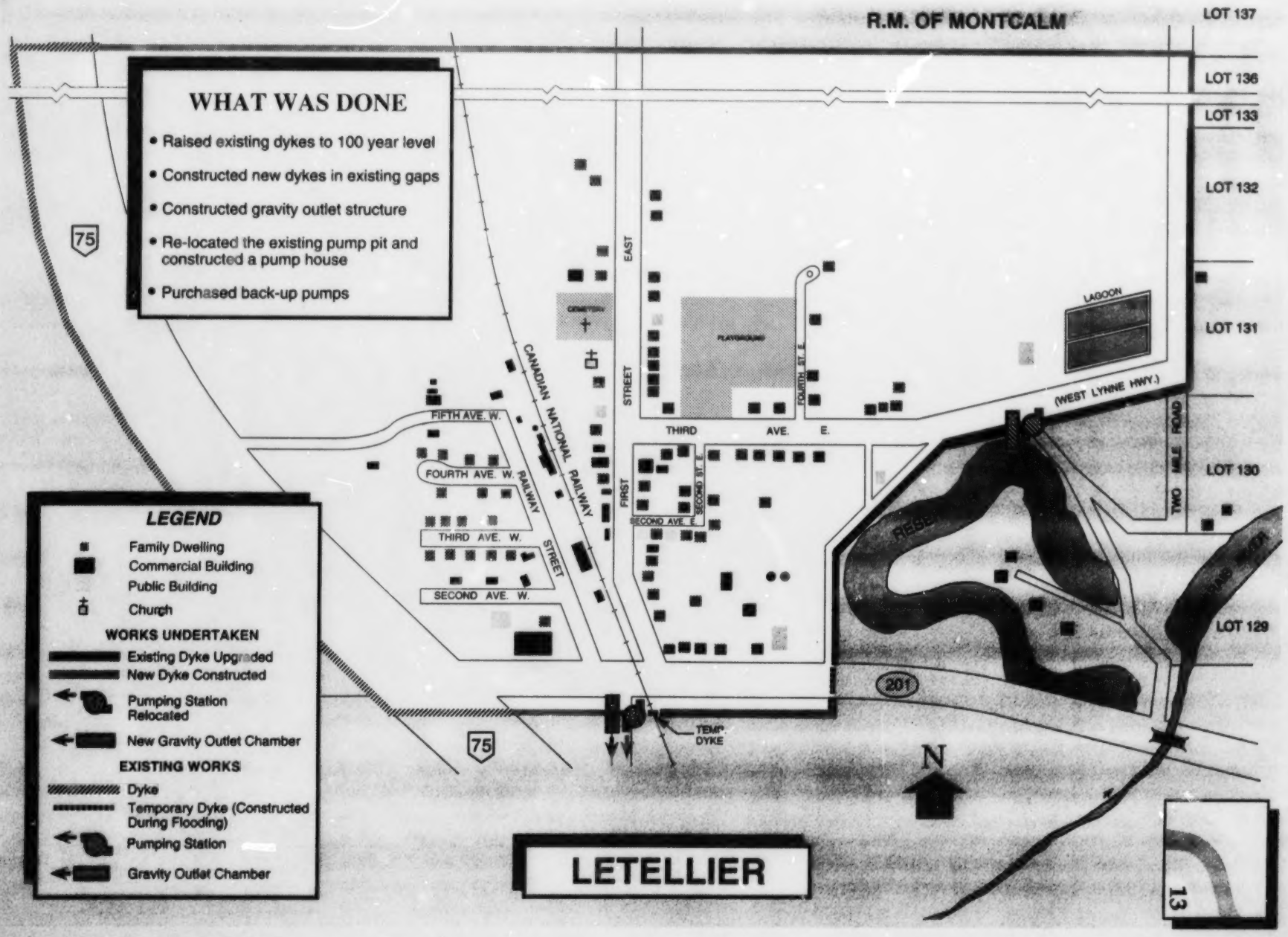
3 Minor audit adjustment

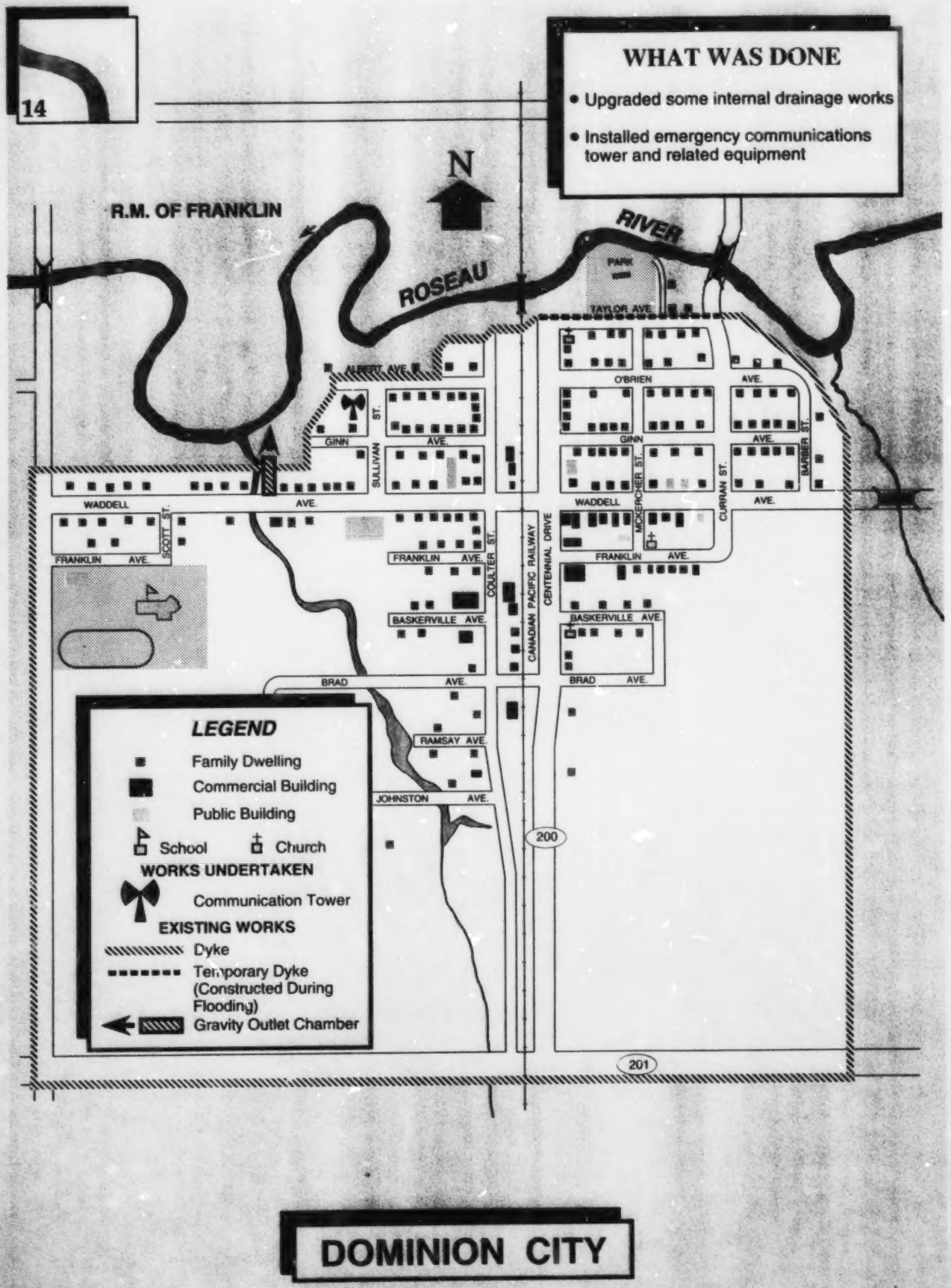
4 Includes a minor audit adjustment

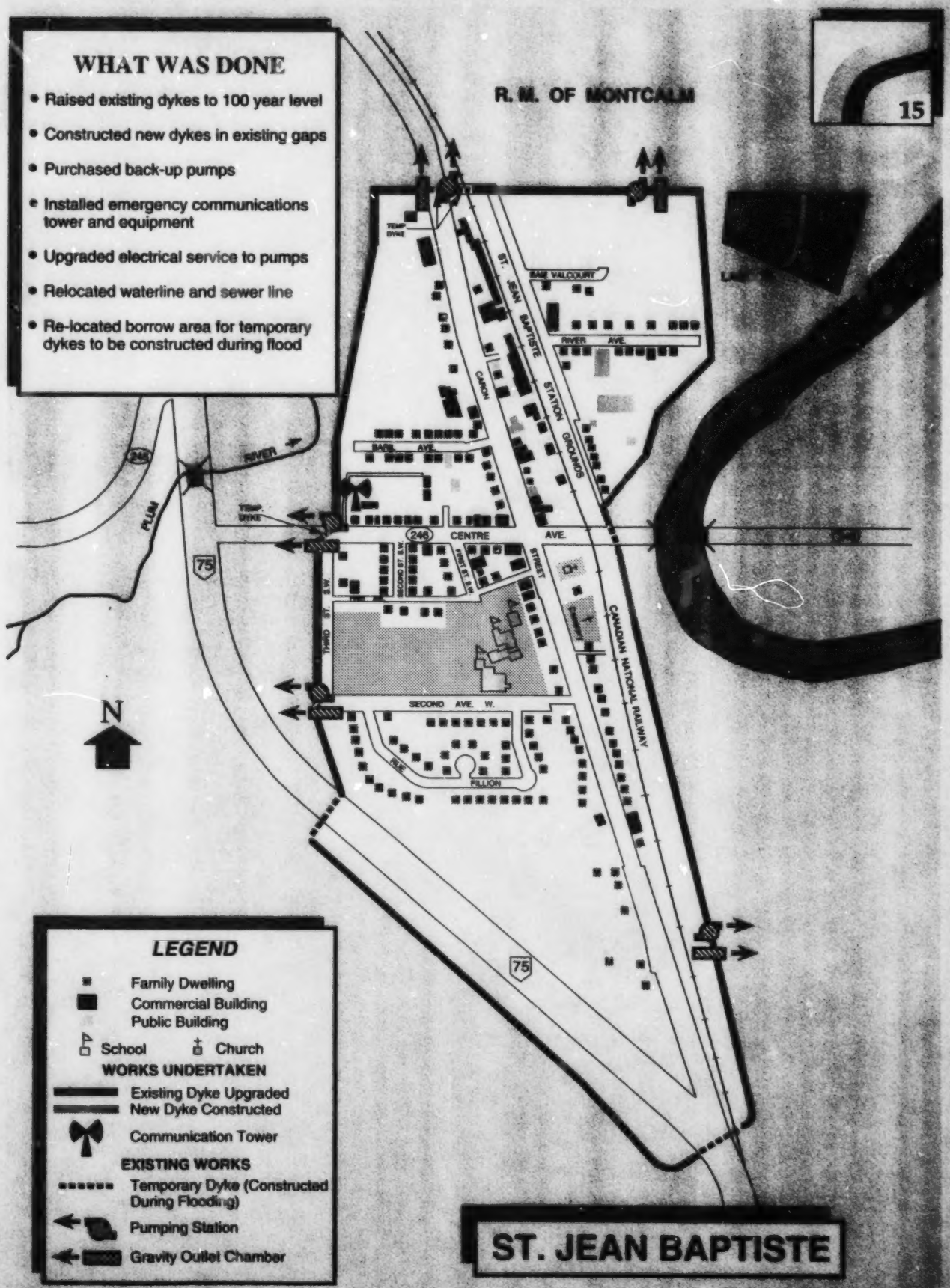
10
N
R.M. OF MORRIS
TEMP. DYKE
TOWN LIMIT
CANADIAN PACIFIC RAILWAY
CANADIAN NATIONAL RAILWAY
CEMETERY
TEMP DYKE
23
75
BOYNE AVE
CHARLES ST
JAMES ST
MULVEY ST
KENNEDY ST
MORRISON ST
OTTAWA AVE
RAILROAD AVE
TORONTO AVE
MONTREAL AVE
VICTORIA AVE
WELLINGTON ST
MAIN ST
H
WHAT WAS DONE
• Raised existing dykes to 100 year level
• Constructed new dykes in existing gaps
• Purchased back-up pumps
• Constructed a central storage facility
• Modified internal drainage flow pattern
• Installed emergency communications tower and related equipment
MORRIS

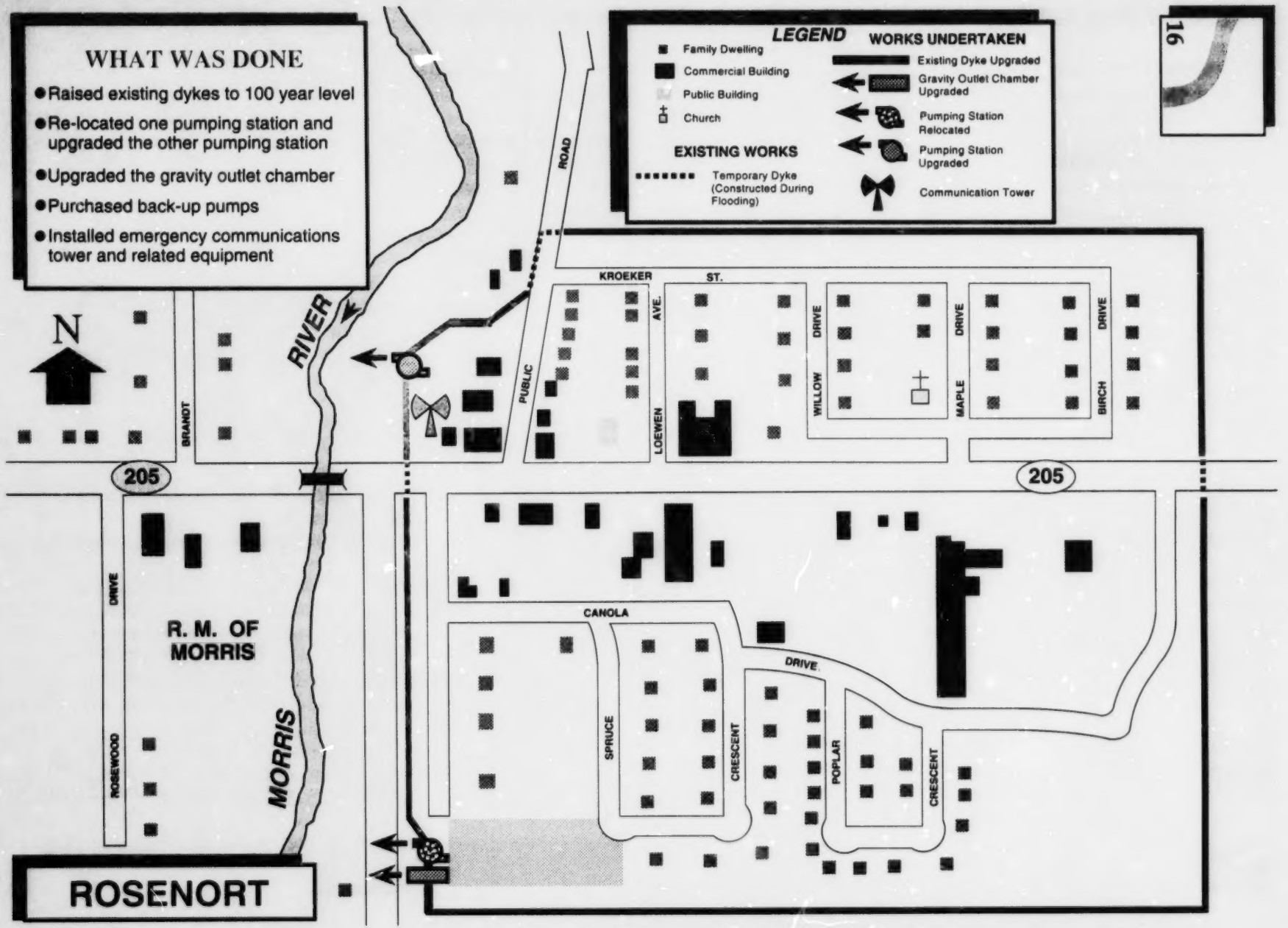

WHAT WAS DONE
• Raised existing dykes to 100 year level
• Constructed new dykes in existing gaps
• Constructed pumping station and gravity outlet structure to handle internal water
• Purchased back-up pumps
• Installed emergency communications tower and related equipment
N
332
11
3
305
23
TEMP. DYKE
PARK
TOWN LIMIT
LEGEND
Family Dwelling
Commercial Property
Commercial Building
Public Building
School
Church
WORKS UNDERTAKEN
Existing Dyke Upgraded
New Dyke Constructed
New Pumping Station
New Gravity Outlet Chamber
Communication Tower
EXISTING WORKS
Temporary Dyke (Constructed During Flooding)
Pumping Station
Gravity Outlet Chamber
R. M. OF MACDONALD
BRUNKILD

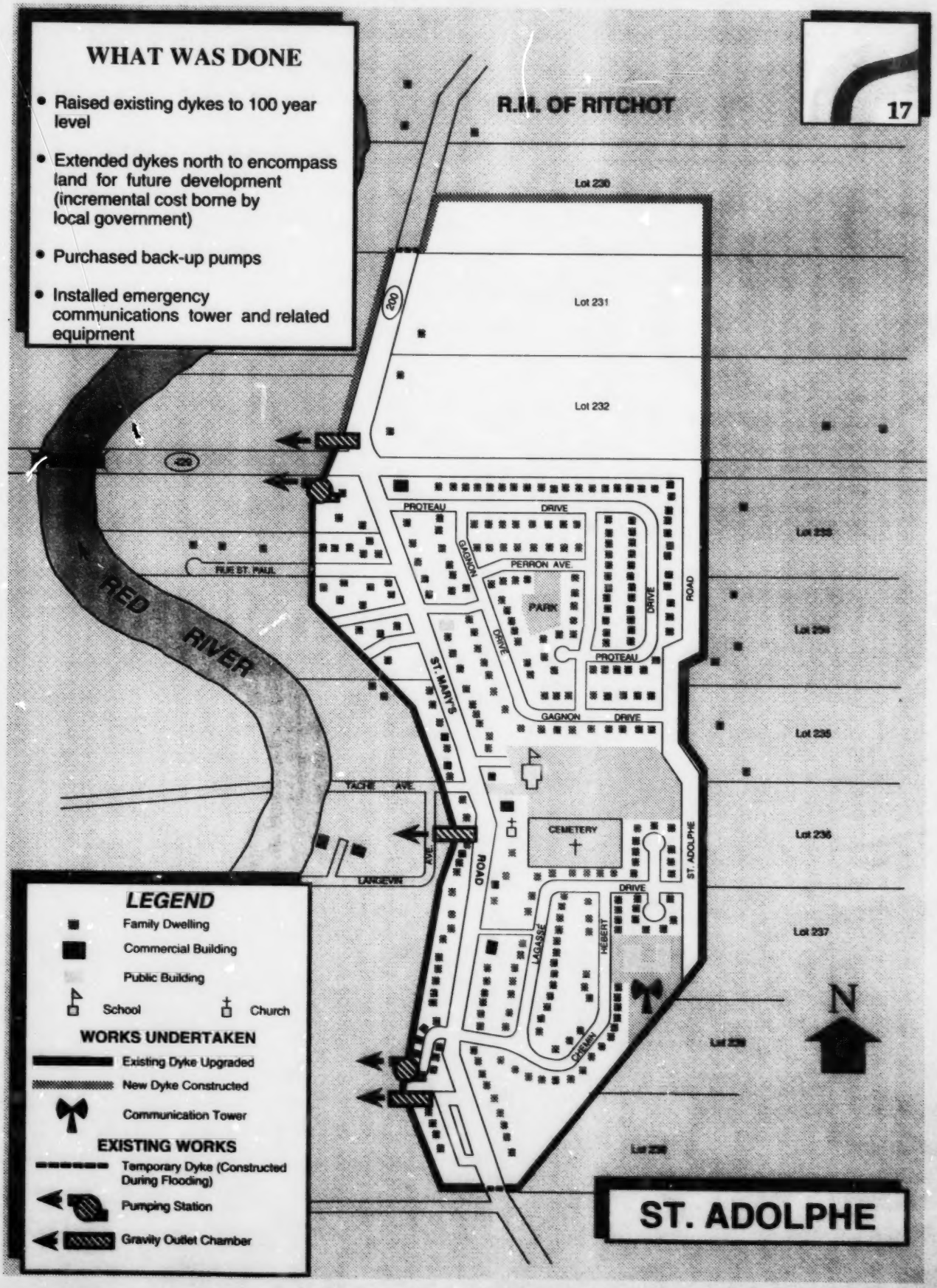

WHAT WAS DONE
• Raised existing dykes to 100 year level
• Constructed new dykes along International Boundary, within Minnesota
• Purchased back-up pumps
• Installed emergency communications tower and related equipment
• Constructed 120m of sheet piling dyke adjacent to the hospital
LEGEND
Family Dwelling
Commercial Building
Public Building
School
Church
WORKS UNDERTAKEN
Existing Dyke Upgraded
New Dyke Constructed
Communication Tower
EXISTING WORKS
Temporary Dyke (Constructed During Flooding)
Pumping Station
Gravity Outlet Chamber
PARISH OF STE. AGATHE
12
RED RIVER
TEMP DYKE
LAGOON
CANADIAN NATIONAL RAILWAY
WEST LYNNE
CEMETERY
PARK AREA
CNR
CUSTOMS
75
29
N
UNITED STATES OF AMERICA
New dyke constructed jointly by the United States of America and Canada
Upgraded dyke funded by the United States of America
EMERSON
NOYES

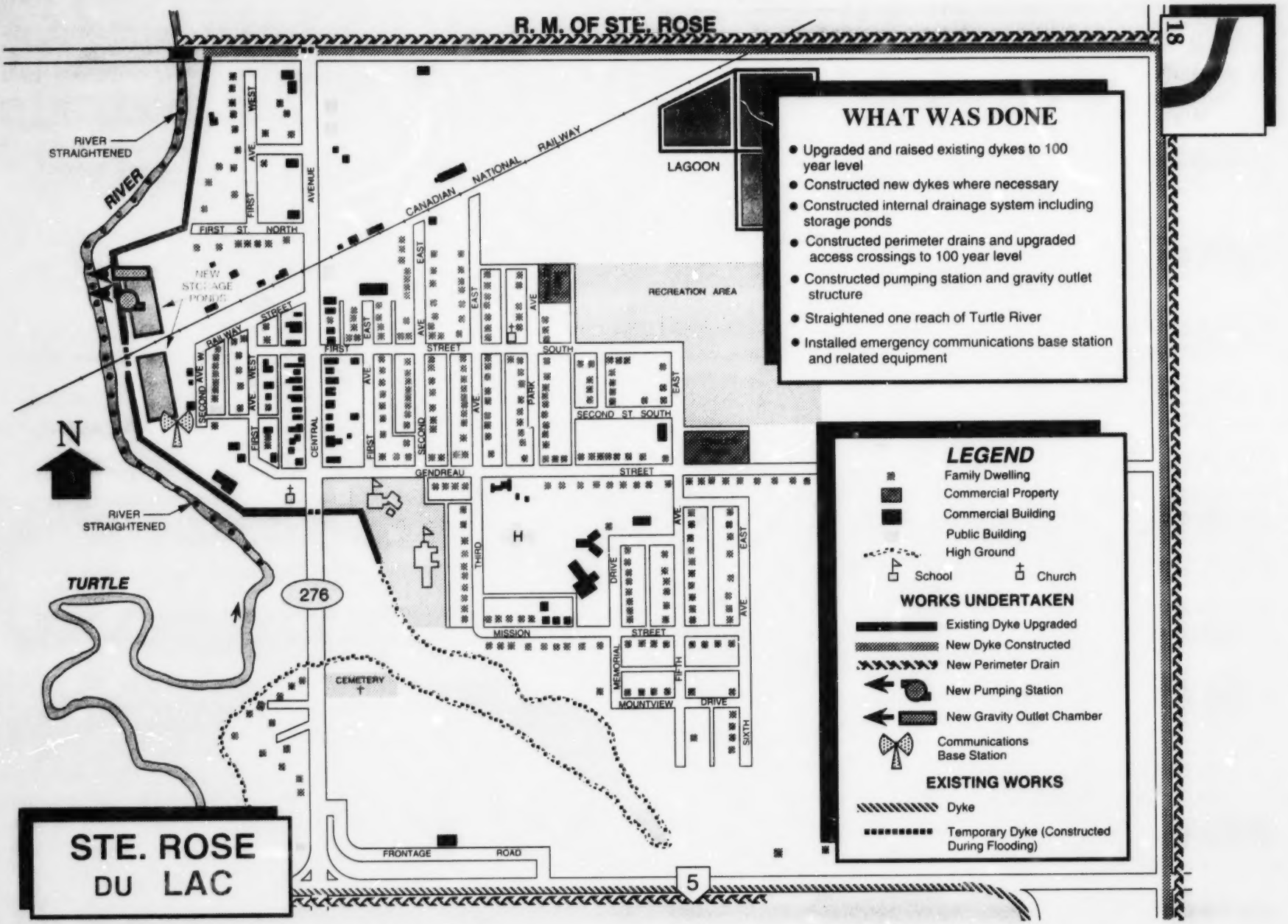

R.M. OF MONTCALM
LOT 137
LOT 136
LOT 133
LOT 132
LOT 131
LOT 130
LOT 129
WHAT WAS DONE
• Raised existing dykes to 100 year level
• Constructed new dykes in existing gaps
• Constructed gravity outlet structure
• Re-located the existing pump pit and constructed a pump house
• Purchased back-up pumps
LEGEND
Family Dwelling
Commercial Building
Public Building
Church
WORKS UNDERTAKEN
Existing Dyke Upgraded
New Dyke Constructed
Pumping Station Relocated
New Gravity Outlet Chamber
EXISTING WORKS
Dyke
Temporary Dyke (Constructed During Flooding)
Pumping Station
Gravity Outlet Chamber
75
EAST STREET
CANADIAN NATIONAL RAILWAY
FIFTH AVE. W.
FOURTH AVE. W.
THIRD AVE. W.
SECOND AVE. W.
RAILWAY STREET
FIRST
SECOND ST. E.
SECOND AVE. E.
THIRD AVE. E.
FOURTH ST. E.
PLAYGROUND
LAGOON
(WEST LYNNE HWY.)
TWO MILE ROAD
RESE
201
TEMP. DYKE
N
LETELLIER
13

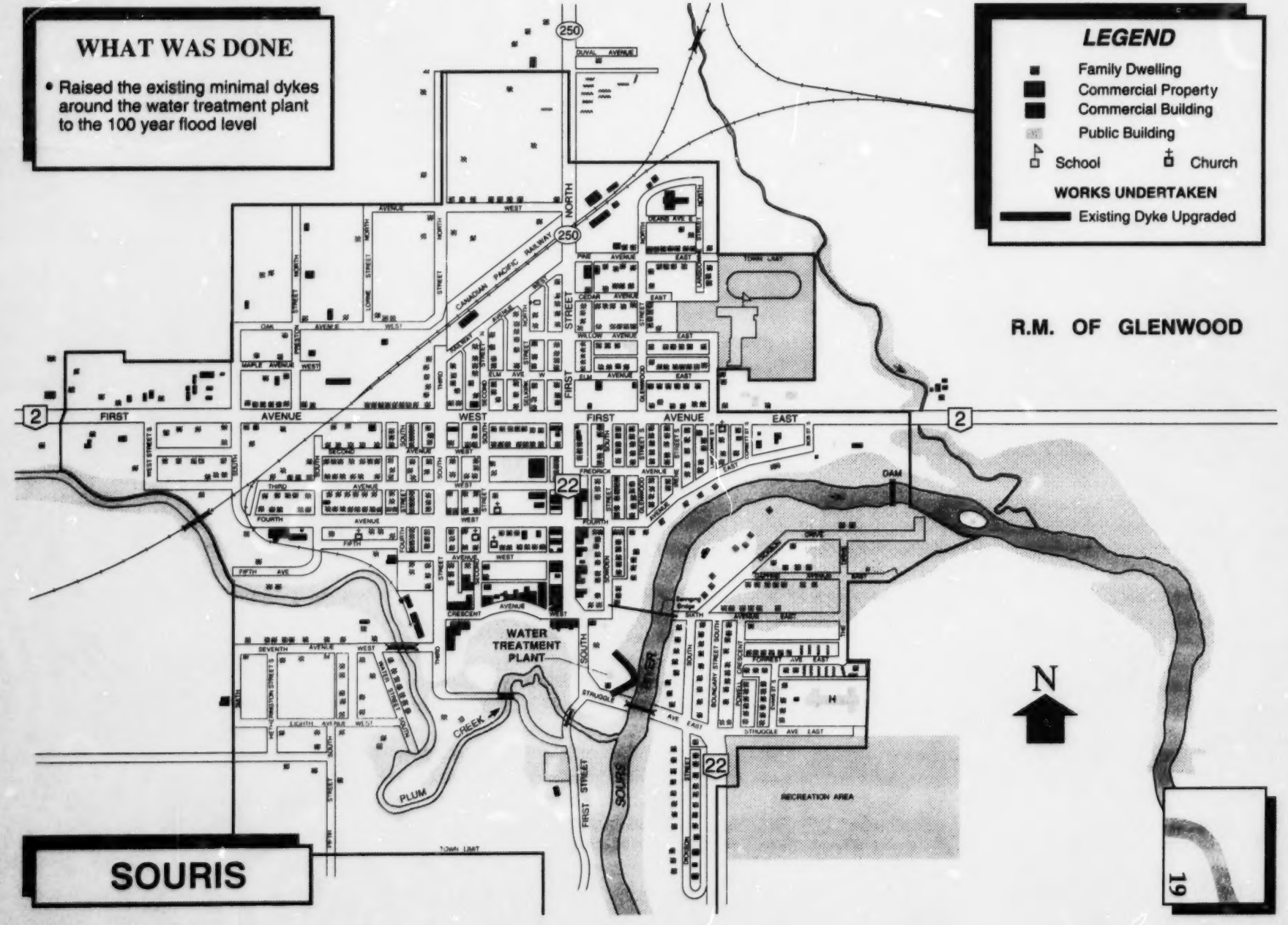

14
WHAT WAS DONE
• Upgraded some internal drainage works
• Installed emergency communications tower and related equipment
N
R.M. OF FRANKLIN
ROSEAU
RIVER
PARK
TAYLOR AVE.
ALBERT AVE.
O'BRIEN
AVE.
GINN
AVE.
SULLIVAN
ST.
BARRIER ST.
MCKERCHER ST.
CURRAN ST.
WADDELL
AVE.
SCOTT ST.
FRANKLIN AVE.
COULTER ST.
CANADIAN PACIFIC RAILWAY
CENTENNIAL DRIVE
BASKERVILLE AVE.
BRAD
AVE.
RAMSAY AVE.
JOHNSTON
AVE.
200
201
LEGEND
Family Dwelling
Commercial Building
Public Building
School
Church
WORKS UNDERTAKEN
Communication Tower
EXISTING WORKS
Dyke
Temporary Dyke (Constructed During Flooding)
Gravity Outlet Chamber
DOMINION CITY

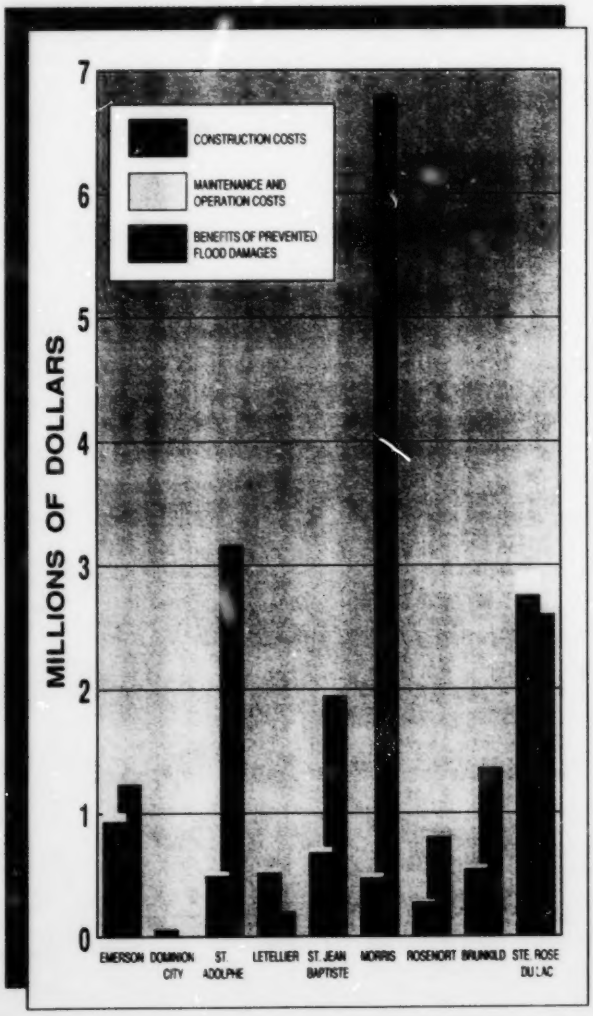

WHAT WAS DONE
• Raised existing dykes to 100 year level
• Constructed new dykes in existing gaps
• Purchased back-up pumps
• Installed emergency communications tower and equipment
• Upgraded electrical service to pumps
• Relocated waterline and sewer line
• Re-located borrow area for temporary dykes to be constructed during flood
R. M. OF MONTCALM
15
TEMP. DYKE
ST. JEAN BAPTISTE
BAIE VALCOURT
RIVER AVE.
CARON
BACK AVE.
STATION GROUNDS
246
RIVER
PLUM
TEMP. DYKE
CENTRE AVE.
75
SECOND ST. S.W.
FIRST ST. S.W.
THIRD ST. S.W.
STREET
CANADIAN NATIONAL RAILWAY
N
SECOND AVE. W.
RUE
PILLION
LEGEND
Family Dwelling
Commercial Building
Public Building
School
Church
WORKS UNDERTAKEN
Existing Dyke Upgraded
New Dyke Constructed
Communication Tower
EXISTING WORKS
Temporary Dyke (Constructed During Flooding)
Pumping Station
Gravity Outlet Chamber
ST. JEAN BAPTISTE


WHAT WAS DONE
Raised existing dykes to 100 year level
Re-located one pumping station and upgraded the other pumping station
Upgraded the gravity outlet chamber
Purchased back-up pumps
Installed emergency communications tower and related equipment
LEGEND
Family Dwelling
Commercial Building
Public Building
Church
EXISTING WORKS
Temporary Dyke (Constructed During Flooding)
WORKS UNDERTAKEN
Existing Dyke Upgraded
Gravity Outlet Chamber Upgraded
Pumping Station Relocated
Pumping Station Upgraded
Communication Tower
16
N
RIVER
PUBLIC ROAD
KROEKER AVE.
ST.
LOEWEN
WILLOW DRIVE
MAPLE DRIVE
BIRCH DRIVE
BRANDT
205
205
ROSEWOOD DRIVE
R. M. OF MORRIS
MORRIS
CANOLA
DRIVE
SPRUCE
CRESCENT
POPLAR
CRESCENT
ROSENORT


WHAT WAS DONE
• Raised existing dykes to 100 year level
• Extended dykes north to encompass land for future development (incremental cost borne by local government)
• Purchased back-up pumps
• Installed emergency communications tower and related equipment
R.M. OF RITCHOT
17
Lot 230
Lot 231
Lot 232
200
425
RED RIVER
RUE ST. PAUL
PROTEAU
DRIVE
GAGNON
PERRON AVE.
PARK
ROAD
ST. MARY'S
YACHT AVE.
LARGEVIN
CEMETERY
ST. ADOLPHE
LAGASSE
HEBERT
CHEMIN
Lot 235
Lot 236
Lot 237
Lot 238
N
LEGEND
Family Dwelling
Commercial Building
Public Building
School
Church
WORKS UNDERTAKEN
Existing Dyke Upgraded
New Dyke Constructed
Communication Tower
EXISTING WORKS
Temporary Dyke (Constructed During Flooding)
Pumping Station
Gravity Outlet Chamber
ST. ADOLPHE


R. M. OF STE. ROSE
18
WHAT WAS DONE
Upgraded and raised existing dykes to 100 year level
Constructed new dykes where necessary
Constructed internal drainage system including storage ponds
Constructed perimeter drains and upgraded access crossings to 100 year level
Constructed pumping station and gravity outlet structure
Straightened one reach of Turtle River
Installed emergency communications base station and related equipment
LEGEND
Family Dwelling
Commercial Property
Commercial Building
Public Building
High Ground
School
Church
WORKS UNDERTAKEN
Existing Dyke Upgraded
New Dyke Constructed
New Perimeter Drain
New Pumping Station
New Gravity Outlet Chamber
Communications Base Station
EXISTING WORKS
Dyke
Temporary Dyke (Constructed During Flooding)
RIVER STRAIGHTENED
RIVER
CANADIAN NATIONAL RAILWAY
LAGOON
RECREATION AREA
NEW STORAGE PONDS
FIRST ST. NORTH
SECOND AVE W
RAILWAY
STREET
AVENUE
CENTRAL
PARK
SECOND ST SOUTH
GENDREAU
MISSION
THIRD
DRIVE
MEMORIAL
FIFTH
MOUNTVIEW
SIXTH
CEMETERY
TURTLE
276
N
H
FRONTAGE ROAD
5
STE. ROSE DU LAC


WHAT WAS DONE
• Raised the existing minimal dykes around the water treatment plant to the 100 year flood level
LEGEND
Family Dwelling
Commercial Property
Commercial Building
Public Building
School
Church
WORKS UNDERTAKEN
Existing Dyke Upgraded
R.M. OF GLENWOOD
SOURIS
WATER TREATMENT PLANT
PLUM CREEK
SOURIS RIVER
DAM
RECREATION AREA
CANADIAN PACIFIC RAILWAY
FIRST AVENUE WEST
FIRST AVENUE EAST
NORTH
FIRST STREET
SOUTH
N
2
22
250
19



The benefits from prevented flood damages has averaged about 2 million dollars per community under the agreement.

WHAT REMAINS TO BE DONE

Under the 1976 "General Agreement Respecting Flood Damage Reduction" the Governments of Canada and Manitoba continue to encourage development away from flood hazard areas by not providing any support for development in these areas. This strategy is the best one for reducing future flood damages. However, many communities in Manitoba have a very significant portion of their business and/or residential developments in floodprone areas and it is not economically feasible to move these developments out of the flood hazard area — the floodprone developments require protection.

The Manitoba Flood Protection Projects Agreement has provided protection against flooding for a number of communities that have experienced major flood damages in the past. The works have provided the citizens of the protected communities with some guarantee of sustainability and hope for the future. And the benefits from prevented flood damages have, on average, been about twice the cost of the flood protection works. There are, however, other communities in Manitoba that each spring face the possibility of their homes and businesses being ravaged by flood waters, and they too require the kind of protection provided to communities like Morris, Rosenort, and St. Adolphe.

Brandon

The City of Brandon is situated along the banks of the Assiniboine River. Most of the developed areas in Brandon are located on high ground south of the Assiniboine River Valley flood plain. However, there is significant industrial, commercial and residential development located on a large portion of the flood plain on the south side of the river known locally as the Brandon Flats. Because the dykes protecting the Brandon Flats area are not up to the 100 year flood level, this has curtailed any further development in the area.

In 1983 Manitoba Water Resources undertook a study which determined that it was economically viable to upgrade the Brandon Flats dyking system. The estimated cost to undertake the required works is approximately $2.35 million.

Riverton

The Village of Riverton is located on the banks of the Icelandic River some five kilometres upstream of Lake Winnipeg. Since its initial settlement, the Icelandic River has brought hardship to the community by periodically overflowing its banks, as it did most recently in 1960,

1974, and 1979. A permanent dyking system is required to enhance the community's sustainability as approximately 60 percent of the community is floodprone.

Arborg

The Village of Arborg is also situated along the banks of the Icelandic River some 30 kilometres upstream of Lake Winnipeg. Arborg has also suffered over the years from the Icelandic River overflowing its banks. The majority of Arborg would be flooded during a 100 year flood event. With the raising of a few roadways and streets around and in the community a major portion of the community could be protected and its continued viability sustained.

Red River Valley

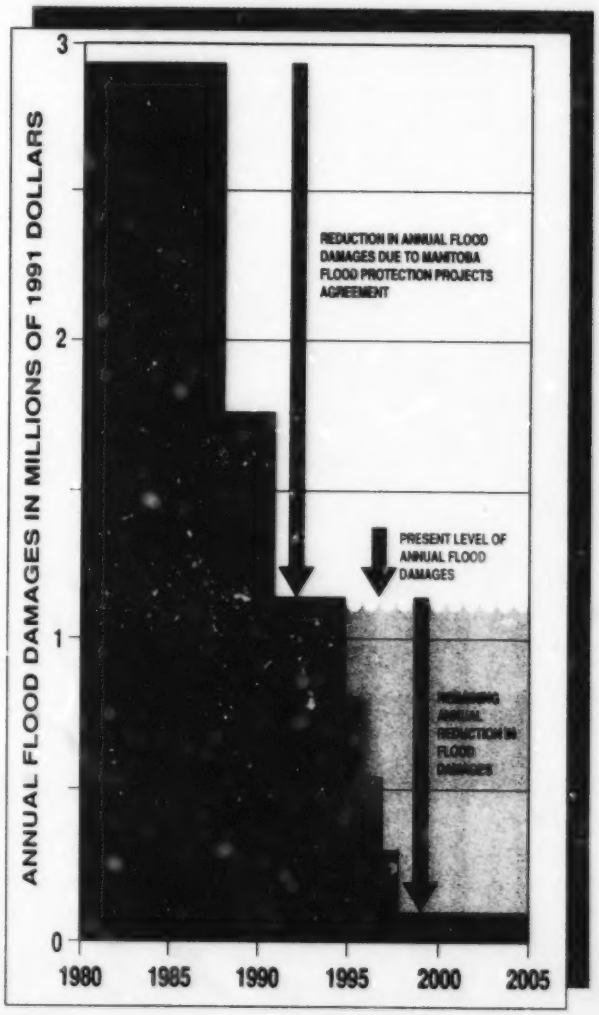
Under the Manitoba Flood Protection Projects Agreement the planned construction of the north portion of the dyke in West Lynne (Emerson), and at Dominion City, the planned upgrading of the east dyke were both not undertaken. These two communities, like the other eight communities whose dyking systems were fully upgraded under the Agreement, require greater protection if they are to be viable farming and agro-business centres.

Other

There are other communities in Manitoba such as Dauphin, Morden, Elie, Fisher Branch, Gladstone, Ochre River, Starbuck, and MacGregor that are constantly being threatened with flooding. Flood reduction works may be warranted in these communities to alleviate the personal and social hardships of dealing with flooding.

Summary

By constructing these remaining flood reduction works, approximately one million dollars of future flood damages can be prevented in an average year. This estimate is only for an average year — in dry years damages would be zero but in wet years damages could well exceed tens of millions of dollars. These works would not only prevent future flood damages but provide the affected communities with sustainability and the increased economic development potential that has not been fully available to them in the past. Flood protection would enable these communities to continue to attract and develop agri-based manufacturing and to effectively act as service and commercial centres for the farm businesses and the people of agro-Manitoba.



The construction of flood protection works for communities still susceptible to flooding would prevent millions of dollars in future flood damages.